



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

## NOTICE OF ALLOWANCE AND FEE(S) DUE

5514 7590 03/05/2009

FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER	
CHU, RANDOLPH I	
ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 03/05/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,781	10/22/2003	Mitsuru Owada	00862.023275.	4538

TITLE OF INVENTION: RESOLUTION CONVERSION UPON HIERARCHICAL CODING AND DECODING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	06/05/2009

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

**HOW TO REPLY TO THIS NOTICE:**

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

## PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

5514            7590            03/05/2009

FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

### **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,781	10/22/2003	Mitsuru Owada	00862.023275.	4538

TITLE OF INVENTION: RESOLUTION CONVERSION UPON HIERARCHICAL CODING AND DECODING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	06/05/2009
EXAMINER		ART UNIT	CLASS-SUBCLASS			
CHU, RANDOLPH I		2624	382-299000			
1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).						
<input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.				1 _____		
<input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. <b>Use of a Customer Number is required.</b>				2 _____		
				3 _____		
3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)						

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent):  Individual  Corporation or other private group entity  Government

4a. The following fee(s) are submitted:

- Issue Fee
- Publication Fee (No small entity discount permitted)
- Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- A check is enclosed.
- Payment by credit card. Form PTO-2038 is attached.
- The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,781	10/22/2003	Mitsuru Owada	00862.023275.	4538
5514	7590	03/05/2009	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112				CHU, RANDOLPH I
ART UNIT		PAPER NUMBER		
2624				DATE MAILED: 03/05/2009

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 675 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 675 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/689,781	OWADA, MITSURU	
	<b>Examiner</b>	<b>Art Unit</b>	
	RANDOLPH CHU	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 12/7/2008.
2.  The allowed claim(s) is/are 2-4, 8, 10, 11, 14-16, 19, 21, 22 and 86-91 (now renumbered to 1-18).
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All    b)  Some\*    c)  None    of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

## DETAILED ACTION

### ***Examiners Amendment***

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiners amendment was given in a telephone interview with Frank Cire (Reg. No. 42,419) on February 26, 2009.

2. (Currently amended) A decoding method of decoding encoded image data which has been hierarchically encoded in advance by a discrete wavelet transform method, comprising:

using a processor to perform the following:

determining a size of an image to be output;

judging a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size;

determining whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy of the encoded image data;

decoding, if the determination proves true, all the layers of hierarchy of the encoded image data, and otherwise decoding the encoded image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy; and

reducing the size of the decoded image to the determined size,

wherein , in said judging step, the number n satisfies a condition of

$$1/2^n > S_{out}/S_{in} > 1/2^{(n+1)}$$

where  $S_{out}$  is an output image size, and  $S_{in}$  is the input image size, n is an integer equal to or greater than 1, and is judged as the minimum number of layer/layers of hierarchy, and in said decoding step, image data is decoded up to a hierarchy until an input-output ratio of image size becomes

$$1/2^{(n-1)}.$$

3. (Currently amended) A decoding method of decoding encoded image data which has been hierarchically encoded in advance by a discrete wavelet transform method, comprising:

using a processor to perform the following:

determining a size of an image to be outputted;

judging a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size;

determining whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy of the encoded image data;

decoding, if the determination proves true, all the layers of hierarchy of the encoded image data, and otherwise decoding the encoded image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy; and

reducing the size of the decoded image to the determined size,

wherein, in said judging step, the number n satisfies a condition of

$$X = \text{Sin}/\text{Sout}$$

$$n = \text{INT}(\log_2 X)$$

where Sout is an output image size, and Sin is the input image size ~~seize~~, and is judged as the minimum number of layer/layers of hierarchy; and

in said decoding step, image data is decoded up to a hierarchy which satisfies a condition of

$$\text{Number of Layer/Layers to Be Decoded} = (\text{Total Number of Layers}) - n + 1.$$

4. (Currently amended) A decoding method of decoding encoded image data which has been hierarchically encoded in advance by a discrete wavelet transform method, comprising:

using a processor to perform the following:

determining a size of an image to be outputted;

judging a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size;

determining whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy of the encoded image data;

decoding, if the determination proves true, all the layers of hierarchy of the encoded image data, and otherwise decoding the encoded image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy; and

Art Unit: 2624

reducing the size of the decoded image to the determined size,  
wherein said decoding the encoded image data up to a layer of hierarchy  
which is one or more layers higher than the minimum number of layer/layers of  
hierarchy further includes:

decoding a lowest layer of hierarchy of encoded image data among  
layer/layers which has/have not been decoded, ~~comparing a size of an image obtained~~  
~~by decoding the encoded image data and the determined size~~, and repeating the  
decoding of a lowest layer of hierarchy of the encoded image data among the  
layer/layers which has/have not been decoded ~~when until it is determined that the size~~  
~~of the decoded image is equal to or larger the size of the decoded image is smaller than~~  
the determined size of the image to be outputted; and

decoding a next lowest layer of hierarchy of the encoded image data ~~when the~~  
~~size of the decoded image becomes not smaller than the determined size for a first~~  
~~time~~.

14. (Currently amended) An encoding method of hierarchically encoding  
image data A decoding method of decoding encoded image data which has been  
hierarchically encoded in advance by a discrete wavelet transform method, comprising:  
using a processor to perform the following:  
determining a size of an image to be outputted;  
judging a minimum number of layer/layers of hierarchy needed to obtain a  
decoded image of size equal to or exceed the determined size;

determining whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy to which of the encoded image data can be encoded; and

encoding decoding, if the determination proves true, all the layers of hierarchy of the encoded image data, and otherwise encoding the decoding the encoded image data up to a layer of hierarchy which is one more layer or more layers higher than the minimum number of layer/layers of hierarchy; and

reducing the size of the decoded image to the determined size,

wherein, in said judging step, the number n satisfies a condition of

$$1/2^n > S_{out}/S_{in} > 1/2^{(n+1)}$$

where  $S_{out}$  is an output image size, and  $S_{in}$  is the input image size, n is an integer equal to or greater than 1, and is judged as the minimum number of layer/layers of hierarchy, and

wherein, in said encoding step, image data is decoded up to a hierarchy until an input-output ratio of image size becomes

$$\underline{1/2^{(n-1)}[[1/2^{(n+1)}]]}.$$

15. (Currently amended) An encoding method of hierarchically encoding image data A decoding method of decoding encoded image data which has been hierarchically encoded in advance by a discrete wavelet transform method, comprising:

using a processor to perform the following:

determining a size of an image to be outputted;

Art Unit: 2624

judging a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size;

determining whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy to which ~~of~~ the encoded image data can be encoded; and

encoding decoding, if the determination proves true, all the layers of hierarchy of the encoded image data, and otherwise encoding the decoding the encoded image data up to a layer of hierarchy which is one more layer or more layers higher than the minimum number of layer/layers of hierarchy; and

~~reducing the size of the decoded image to the determined size,~~

wherein, in said judging step, the number n satisfies a condition of

$$X = S_{\text{in}}/S_{\text{out}}$$

$$n = \text{INT}(\log_2 X)$$

where  $S_{\text{out}}$  is an output image size, and  $S_{\text{in}}$  is the input image size, and is judged as the minimum number of layer/layers of hierarchy, and

wherein, in said encoding step, image data is encoded up to a hierarchy which satisfies a condition of

$$\text{Number of Layer/Layers to Be Decoded} = (\text{Total Number of Layers}) - n + 1.$$

16. (Currently amended) An encoding method of hierarchically encoding image data A decoding method of decoding encoded image data which has been hierarchically encoded in advance by a discrete wavelet transform method, comprising:

Art Unit: 2624

using a processor to perform the following:

determining a size of an image to be outputted;

judging a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size;

determining whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy to which of the encoded image data can be encoded; and

encoding decoding, if the determination proves true, all the layers of hierarchy of the encoded image data, and otherwise encoding the decoding the encoded image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy; and

~~reducing the size of the decoded image to the determined size,~~

wherein said encoding the image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy further includes:

encoding a lowest layer of hierarchy of an image among layer/layers which has/have not been encoded, ~~comparing a size of an encoded image and the determined size~~, and repeating encoding of a lowest layer of hierarchy of the image among the layer/layers which has/have not been encoded until it is determined that the size of the encoded image is equal to or larger decoded when the size of the encoded image is smaller than the determined size of the image to be outputted; and encoding a

next lowest layer of hierarchy of the image ~~when the size of the encoded image becomes not smaller than the determined size for a first time.~~

22. (Currently amended) An encoding apparatus for hierarchically encoding an image, comprising:

a first determination unit that determines a size of an image to be outputted;

a judging unit that judges a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size;

a second determination unit that determines whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy to which the image data can be encoded;

an encoding unit that, if the determination proves true, encodes all the layers of hierarchy of the image data, and otherwise encodes the image up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy; and

reducing the size of the decoded image to the determined size,

wherein, in said judging step, the number n satisfies a condition of

$$1/2^n > S_{out}/S_{in} - 1/2^{(n+1)}$$

Art Unit: 2624

where Sout is an output image size, and Sin is the input image size, n is an integer equal to or greater than 1, and is judged as the minimum number of layer/layers of hierarchy, and

wherein, in said encoding step, image data is decoded up to a hierarchy until an input-output ratio of image size becomes

$$\underline{1/2^{(n-1)}[[1/2^{(n+1)}]]}.$$

89. (Currently amended) A decoding apparatus for decoding encoded image data which has been hierarchically encoded in advance, comprising:

a first determining unit that determines a size of an image to be outputted;  
a judging unit that judges a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size;  
a second determining unit that determines whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy of the encoded image data;

a decoding unit that, if the determination proves true, decodes all the layers of hierarchy of the encoded image data, and otherwise decodes decoding the encoded image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy; and

a reducing unit that reduces the size of the decoded image to the determined size,

wherein when said decoding unit decodes the encoded image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy, the decoding further includes:

decoding a lowest layer of hierarchy of encoded image data among layer/layers which has/have not been decoded, ~~comparing a size of an image obtained by decoding the encoded image data and the determined size~~, and repeating the decoding of a lowest layer of hierarchy of the encoded image data among the layer/layers which has/have not been decoded when until it is determined that the size of the decoded image is equal to or larger ~~the size of the decoded image is smaller than the determined size~~ of the image to be outputted; and decoding a next lowest layer of hierarchy of the encoded image data ~~when the size of the decoded image becomes not smaller than the determined size for a first time~~.

90. (Currently amended) An encoding apparatus for hierarchically encoding image data by a discrete wavelet transform method, A decoding apparatus for decoding encoded image data which has been hierarchically encoded in advance, comprising:

a first determining unit that determines a size of an image to be outputted; a judging unit that judges a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size;

Art Unit: 2624

a second determining unit that determines whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy to which of the encoded image data can be encoded;

an encoding unit a decoding unit that, if the determination proves true, encodes determines all the layers of hierarchy of the encoded image data, and otherwise encodes decoding the encoded image data up to a layer of hierarchy which is one more layer or more layers higher than the minimum number of layer/layers of hierarchy; and

a reducing unit that reduces the size of the decoded image to the determined size,

wherein, in said judging unit, the number n satisfies a condition of

$$X = \text{Sin/Sout}$$

$$n = \text{INT}(\log_2 X)$$

where Sout is an output image size, and Sin is the input image size, and is judged as the minimum number of layer/layers of hierarchy, and

wherein, in said encoding step, image data is encoded up to a hierarchy which satisfies a condition of

$$\text{Number of Layer/Layers to Be Decoded} = (\text{Total Number of Layers}) - n + 1.$$

91. (Currently amended) An encoding apparatus for hierarchically encoding image data A decoding method of decoding encoded image data which has

Art Unit: 2624

~~been hierarchically encoded in advance~~ by a discrete wavelet transform method, comprising:

a first determining unit that determines a size of an image to be outputted;

a judging unit that judges a minimum number of layer/layers of hierarchy

needed to obtain a decoded image of size equal to or exceed the determined size;

a second determining unit that determines whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy to which of the ~~encoded~~ image data can be encoded;

an encoding unit that decoding, if the determination proves true, encodes all the layers of hierarchy of the ~~encoded~~ image data, and otherwise encodes ~~decoding~~ the ~~encoded~~ image data up to a layer of hierarchy which is one layer or more layers higher than the minimum number of layer/layers of hierarchy; and

~~reducing the size of the decoded image to the determined size~~, wherein said encoding the image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy further includes:

encoding a lowest layer of hierarchy of an image among layer/layers which has/have not been encoded, ~~comparing a size of an encoded image and the determined size~~, and repeating encoding of a lowest layer of hierarchy of the image among the layer/layers which has/have not been encoded until it is determined that the size of the encoded image is equal to or larger decoded when the size of the encoded image is smaller than the determined size of the image to be outputted; and encoding a

next lowest layer of hierarchy of the image ~~when the size of the encoded image becomes not smaller than the determined size for a first time.~~

***Allowable Subject Matter***

1. Claims 2-4, 8, 10, 11, 14-16, 19, 21, 22 and 86-91 are allowed.

The following is an examiner's statement of reasons for allowance:

Claims 2, 3, 4, 11, 88 and 89 are allowable over the prior art of record because none of the prior art of record teaches the combined claimed elements as set forth in the claim 2, 3, 4, 11, 88 and 89.

None of the prior art of record teaches or fairly suggests that image processing method for decoding encoded image data which has been hierarchically encoded in advance by a discrete wavelet transform method that produce determined size of image that judge a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size; determine whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy of the encoded image data; decode, if the determination proves true, all the layers of hierarchy of the encoded image data, and otherwise decoding the encoded image data up to a layer of hierarchy which is one or more layers higher than the minimum number of layer/layers of hierarchy; and reduce the size of the decoded image to the determined size, and together with combination of other claimed elements as set

forth in the independent claims 2, 3, 4, 11, 88 and 89. Therefore, the claim 2, 3, 4, 11, 88 and 89 are over the prior art of records.

Claims 14-16, 22, 90 and 91 are allowable over the prior art of record because none of the prior art of record teaches the combined claimed elements as set forth in the claim 14-16, 22, 90 and 91.

None of the prior art of record teaches or fairly suggests that image processing method for an encoding method of hierarchically encoding image data by a discrete wavelet transform that judge a minimum number of layer/layers of hierarchy needed to obtain a decoded image of size equal to or exceed the determined size; determine whether the minimum number of layer/layers of hierarchy corresponds to all the layers of hierarchy to which the image data can be encoded; and encode, if the determination proves true, all the layers of hierarchy of the image data, and otherwise encoding the image data up to a layer of hierarchy which is one more layer higher than the minimum number of layer/layers of hierarchy, and together with combination of other claimed elements as set forth in the independent claims 14-16, 22, 90 and 91.

Therefore, the claim 14-16, 22, 90 and 91 are over the prior art of records.

Claims 8, 10, 19, 21, 86, 87 are allowed because they are depended on independent claims 2, 3, 4 and 14.

Any comments considered necessary by applicant must be submitted no later than payment of the issue fee and, to avoid processing delay, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reason for Allowance."

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randolph Chu whose telephone number is 571-270-1145. The examiner can normally be reached on Monday to Thursday from 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RIC/

/Matthew C Bella/

Application/Control Number: 10/689,781

Page 17

Art Unit: 2624

Supervisory Patent Examiner, Art Unit 2624